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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/646,509	08/22/2003	Brice A. Johnson	091-0185	9658
27431	7590	04/04/2006	EXAMINER	
SHIMOKAJI & ASSOCIATES, P.C. 8911 RESEARCH DRIVE IRVINE, CA 92618			AFTERGUT, JEFF H	
			ART UNIT	PAPER NUMBER
			1733	

DATE MAILED: 04/04/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

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Office Action Summary	Application No. 10/646,509	Applicant(s) JOHNSON ET AL.	
	Examiner Jeff H. Aftergut	Art Unit 1733	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 24 February 2006.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-37 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-37 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
 Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
 Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|---|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date <u>2-24-06, 1-20-06</u> | 6) <input type="checkbox"/> Other: _____ |

Claim Rejections - 35 USC § 102

1. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(a) the invention was known or used by others in this country, or patented or described in a printed publication in this or a foreign country, before the invention thereof by the applicant for a patent.

2. Claims 1, 3, 10, 11, 13, 15, 18, 19, 23, 25-28, 30-33 and 35 are rejected under 35 U.S.C. 102(a) as being anticipated by PCT WO 03/035380.

PCT '380 suggested that it was known at the time the invention was made to provide a system for application of composite material on a mandrel surface of a tool having a rotational axis. The reference suggested that a tool 3 having a mandrel surface was provided with a mechanical support structure wherein the tool surface was capable of rotation with a positioner 23 which rotated the same about the axis of the tool 3. the reference taught that a plurality of robots 20 were disposed on a support structure 24 and disposed about the tooling 3 wherein the robots 20 were responsible for application of resin impregnated fibrous material onto the mandrel surface of the tool 3. the reference taught that each of the plurality of delivery heads of the robots was individually adjustable relative to one another of the plurality of placement heads and relative to the mandrel surface during the automated composite lamination operation. PCT '380 additionally suggested that the mandrel surface of the tool 3 was irregular and thus one viewing the reference would have understood that each robot would have had to have been independently operated from the other robots in order to provide for proper placement of the composite material on the mandrel surface. The reference

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suggested that the support 24 for the robots 20 carrying the placement heads 21 was in the form of a ring.

It should be noted regarding claims 3 and 13 that the reference to PCT '380 suggested that those skilled in the art would have included an arm with the robot systems 20 employed therein the arm is disposed between the placement head 21 and the support structure 24 of the system and is responsible for placement of the head relative to the mandrel surface. Regarding claims 6 and 15, note that the reference clearly suggested a fiber placement operation wherein the fibers were laid in the form of a plurality of ribbons in the form of a tape which matched the contour of the surface of the mandrel. Such robotic systems were typically characterized as fiber placement systems. Regarding claim 18, note that the system of PCT '380 operated the plurality of heads simultaneously to apply the material onto the mandrel 3. regarding claim 23 one would have understood that the rotation of the mandrel with means 23 would have been coordinated with the placement and individual movement of the robots 20 in order to apply the composite material simultaneously from plural heads. Regarding claim 26-28, 30-33, and 35, the robots 20 as disclosed in the reference were capable of movement independent of each other in the manner claimed in order to provide the composite material over the entire surface of the mandrel surface of tooling 3.

Claim Rejections - 35 USC § 103

3. The text of those sections of Title 35, U.S. Code not included in this action can be found in a prior Office action.

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4. Claims 1-37 are rejected under 35 U.S.C. 103(a) as being unpatentable over PCT WO 03/035380 in view Koury and either one of Bendarzewski, et al or Zsolnay et al (newly cited) further taken with the admitted prior art and E.P. 198,744 optionally further taken with Ermert.

The reference to PCT '380 is discussed at length above in paragraph 2 and applicant is referred to the same for a complete discussion of the reference. The reference suggested that one skilled in the art would have employed plural robotic placement devices with associated applicator heads for placement of the fiber upon the form simultaneously. The applicant is advised that one viewing the reference would have understood the merits of utilizing plural applicators simultaneously for application of the material upon the mandrel. This is further exemplified by Koury and either one of Bendarzewski, et al or Zsolnay et al.

Koury suggested a plurality of placement devices which applied fibers in a tooling in the manufacture of an isogrid and expressly stated that the use of multiple heads increased the productivity of the operation. while the plural applicators were used to apply the material on a uniform tooling wherein the individual heads in Koury were not described as being capable of movement independently of one another, the reference to PCT '380 clearly envisioned the use of plural applicators which were capable of movement independent of one another. It should be noted that the heads in Koury were all disposed upon a ring which was arranged in a manner similar to that of PCT '380. Additionally, it should be noted that PCT '380 suggested that one skilled in the art would have disposed the mandrel in a vertical position as claimed . Additionally, the

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references of Bendarzewski, et al (column 7, lines 45-50) or Zsolnay et al (column 7, lines 45-50) both suggested that increased productivity would have been obtained with the use of plural applicator heads in a fiber placement system. It should be noted that the surface employed in either one of Bendarzewski, et al or Zsolnay et al was an irregular surface and thus one skilled in the art would have understood that each of the applicators would have been operated independently of the other applicators when using plural applicator heads for application of the fiber material on the irregular form. The combination failed to expressly disclose the specific use of either tape application or fiber placement or contoured fiber tapes on the surface.

The admitted prior art suggested that it was known to apply fiber reinforcement with a tape laying head or a fiber placement head (which would have been able to apply the filaments along a contoured surface). These placement devices for fiber placement were known per se in the art of composite article manufacture. While the reference to Koury or PCT '380 suggested that one skilled in the art would have utilized fiber placement devices, one skilled in the art would have been well aware that various devices were known in the art for application of filamentary material including both tape placement as well as fiber placement devices. To employ either device in the operation of PCT '380 would have been within the purview of the ordinary artisan applying fibers to a form for application thereto. The references to PCT '380 taught that the application device (whether it be fiber placement or tape laying) would have incorporated an arm as a manipulator for the application head as depicted in the Figures therein for the robots. The reference did not dive specifics on the manipulation

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of the applicator heads with the robots which included the arms therein. The reference to European Patent 198,744 suggested such an arrangement.

More specifically, European Patent 198,744 suggested that it was known to associate an arm with a fiber placement of tape laying head in order to provide for the various degrees of freedom of movement of the head. The reference to E.P. '744 suggested that one skilled in the art would have utilized an arm with a placement head 5 including a roller for application of filamentary material from either a creel arrangement 8 or a tape from a spool supply 8a. clearly E.P. '744 envisioned that one skilled in the art would have understood that an applicator for a fiber placement device would have been disposed on the end of a manipulator which included an arm for multi axial movement. Note that the arm assembly provided for movement of the placement head in the exact local where one desired to disposed the fiber material. It would have been obvious to one of ordinary skill in the art at the time the invention was made to employ an arm as a means for placement of an applicator head of a fiber placement device as such arms were well known and useful for such manipulation as evidenced by either one of European Patent 198,744 wherein the placement devices would have included tape layers as well as fiber placement devices as such devices were well known for application of composite materials onto forms as expressed by applicant's admitted prior art wherein the device for application of the material included a plurality of applicators disposed about a form including a ring which was traversed about a rotating form as evidenced by Koury where the use of plural applicators was known as desirable

as evidenced by either one of Bendarzewski, et al or Zsolnay et al in the system of application of composite material on a mandrel as taught by PCT WO 03/035380.

With regard to the various dependent claims, the use of a fiber placement device or a tape laying device for application of the composite material was well known as evidenced by the applicant's admitted prior art. The use of an arm to manipulate the applicator would have been within the purview of the ordinary artisan wherein such would have included the use of a controller wherein the arm provided for multiaxial movement of the placement device (such was known in the art at the time the invention was made and the reference to PCT '380 clearly provided control for placement of the material by controlling the applicator devices). It additionally should be noted that the rate of application was directly a result of the number of applicators as well as the speed with which the applicators were capable of applying the material. As the reference to Koury as well as either one of Bendarzewski, et al or Zsolnay et al clearly wanted to increase productivity with an increase in the number of applicators, it would have been within the purview of the ordinary artisan to provide for the specified production rates by adding the required number of applicator heads and operating the device at a useful speed.

While the references to either one of European Patent 198,744 or PCT WO 03/035380 suggested that the use of an arm as a manipulator was well known for a fiber placement device, they do not afford one with the ability to interchange the heads to that the tool at the end of the arm could be altered to provide various applications (i.e. fiber placement of tape laying). However, the use of a robotic arm with an end effector

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which was capable of being changed such that one could employ an arm with either a fiber placement device or a tape laying device as taught by Ermert. More specifically, the tool used at the end of the arm was capable of being changed in order to utilize the same robotic arm for various manipulative steps with differing tools. The reference suggested that the arm was capable of multiaxial movement. It would have been obvious to one of ordinary skill in the art at the time the invention was made to employ an arm with the fiber placement device in order to allow one to easily vary the tool disposed on the end of the arm as suggested by Ermert in the process and device of placement of fibers upon a form wherein an arm was used as the manipulator as taught by PCT WO 03/035380 and wherein it was known to utilize various placement devices including fiber placement and tape laying devices as taught by the applicant's admitted prior art when plural applicators were disposed on an application ring which was moved relative to the rotating form as taught by Koury as it was well known such plural applicators would have increased productivity as evidenced by either one of Bendarzewski, et al or Zsolnay et al in the system of applying plural fibers from plural applicator heads simultaneously wherein the heads were operable individually as suggested by PCT WO 03/035380.

Response to Arguments

5. Applicant's arguments with respect to claims 1-37 have been considered but are moot in view of the new ground(s) of rejection.

The applicant essentially takes the position that the prior art failed to teach that one skilled in the art would have employed placement heads which were capable of independent movement relative to each other. The applicant is advised that it appears from the Figures as well as a partial machine translation of pages 9 and 10 of the document that the individual robotic applicators were capable of manipulation independent of one another to apply the material onto the tooling therein. The applicant is additionally advised that, as the tooling had a non-uniform shape, one skilled in the art would have expected that each of the applicator heads would have had to have been capable of independent movement relative to one another in order to apply the material simultaneously over the non-uniform surface of the tooling.

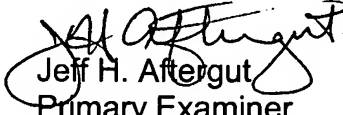
Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Jeff H. Aftergut whose telephone number is 571-272-1212. The examiner can normally be reached on Monday-Friday 7:15-345 pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Richard Crispino can be reached on 571-272-1226. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

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Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).


Jeff H. Aftergut
Primary Examiner
Art Unit 1733

JHA
March 21, 2006